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ABSTRACT

A discussion is presented on the topic of applying educational research to investigation of the effectiveness of teacher education programs as they develop students' teaching skills within the context of their experiences in the world beyond immediate classroom practice. It is suggested that such research focus upon two phenomena--teachers who continue to learn, develop, change, or maintain effective practices, and teacher education designed to develop teachers' skills, knowledge, attitudes, or behaviors. Previous research results in this area are analyzed briefly. Two kinds of research are considered as effective evaluation tools for exploring this subject: improvement research that focuses primarily on teacher education programs; and descriptive research that investigates the impact of the change process on the teacher when an innovation is being introduced. Several case studies are provided as examples of the use of these two kinds of research, and their effectiveness is considered. (JD)

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The Interactive Effects of Context, Teaching and Teacher Education: A Conceptualization of Issues for Investigation

by

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Introduction

The reader will note several changes in the title of this paper from the title which is contained in the AERA program. Those changes are not, in my mind, incidental or insignificant and reflect revisions in my thinking since having had the opportunity to delve more deeply into the relevant research than was possible at the time the original title was developed.

As a reminder, the former title was "The Effects of Context on Teaching and Inservice Training." The first charge was the addition of "interactive" to indicate that it is my hypothesis that the effects of context are interactive with, rather than simply having an effect upon, teaching and teacher education. "Inservice Training" was changed to "Teacher Education" to the view that it is counterproductive, at least conceptually, to segment or isolate the various points on what should be a continuum of teacher education. I shall speak more specifically about this continuum, its relevance as a conceptual construct and the varying interactive effects that context may have with different points on this continuum. "Education" is used rather than "training" to reflect a broader and more substantial type of learning for teachers. Finally, I have added "A Conceptualization of Issues for Investigation" as a means of conveying the opinion that we are not now at an appropriate stage to systematically speak about "applications for practice" relative to these interactive effects of context, teaching and teacher education. Although there were some implications for practice that were perhaps self-evident in analyzing the conceptual and empirical work which we already have on context, for the most part the existing efforts have served to identify issues and possible ways in which these issues could be considered in seeking further conceptual

clarity or filling in knowledge gaps. Therefore, this paper does not concentrate on implications for practice in teaching and teacher education but, rather, concentrates on what is presently known or thought about context effects and where and how we need to look for additional insights as a prior question to "What does this all mean for practice?"

Overview

Having put the cart before the horse by exposing several of my biases and conclusions in my opening comments, allow me to provide an overview of how I arrived at those points and then proceed to present a more detailed analysis of the existing evidence on which they are based.

There were two strong impressions that dominated as I began my initial tasks of assessing what we know about the "effects of context on teaching and teacher education." First, there is little thorough understanding or systematic thought in evidence about not just the effects but even the basic nature and possible relationship of the elements comprising the "context" in these areas. Second, it appears unreasonable to arbitrarily attempt to examine context as a discrete and isolated factor that should be considered without either integrated or parallel consideration of other factors such as the content or the process of teaching and teacher education. Time and time again, various practitioners, researchers and others writing on the subject of context inevitably related it at least partially with other elements such as content and process. Perhaps it is necessary and even crucial to be as specific as we can in defining the nature of context for purposes of conducting research on it but logic and much initial work in the area indicate much interrelatedness to other factors.

To date, much of the research that we have relative to teaching and teacher education has been confined to what is most commonly known as "teacher effects" and "instructional processes" research. The principal aim here has been to identify and describe relationships between teacher behavior and skills and student outcomes, principally achievement gains. Most of the work has been done in the mathematics and reading areas and much of it at the elementary level. Although it is not my intent to catalog or analyze the results of this work since that has been done with considerable comprehensiveness and care by several persons in recent years (e.g. Medley, 1977; Good, 1979; Rosenshine (in press)). Suffice it to say that results indicate the need for situation-specific teaching techniques utilized within an overall strategy that has come to be known most popularly as "direct instruction." The most simple interpretation of this rather complex strategy is that it is characterized by the teacher being the center of direction and an effective manager of the classroom activities, teacher emphasis and student engagement on directly content-relevant tasks are high, an atmosphere of cooperation and success prevails, and academic feedback to students is very much in evidence.

Although this research provides a very helpful source of information about what some of the content of teacher education might include, it was not intended to address and does not help us a great deal in understanding the nature and implications of context. It does not tell us very much about the world of the teacher outside the nature of his/her instructional role with the students and it does not even begin to prescribe ways in which teacher education might effectively work with teachers to develop or maintain these teaching behaviors which have been associated with greater student outcomes.

One need not be clairvoyant or possess the wisdom of the ages to realize that the "teacher effects" work is necessary but not sufficient. Many of the researchers working in this area have themselves recognized the need for complementary efforts in many ways. Some have discovered this via their own initiative while others have had it brought to their attention, sometimes not so gently, by teachers and other practitioners who may find the results interesting and potentially useful but do not find within them the means to deal with a very large set of problems. Among these are not knowing whether utilization of these "effective behaviors" is compatible with their individual state of human/professional development; their classroom, school and other institutions within which they operate; the multiple and complex demands being made upon them and their roles and responsibilities in responding to these demands; the support they will receive for any necessary development to reach or maintain these behaviors; and other features of their day-to-day real world of teaching. In other words, how does all of this knowledge about effective behaviors relate to the CONTEXT of their world and what will that mean for the appropriateness of exhibiting and their ability to exhibit those behaviors.

In order to provide that necessary additional information, investigation of two phenomena appear to be crucial. Again putting the cart before the horse, let me describe those basic phenomena and then present the existing evidence that would appear to lend credibility to such an approach and explicate the need for a specific focus on context as a major part of that framework. In that way the reader can judge the adequacy of this

suggested framework and perhaps consider adaptations or alternative frameworks which might prove fruitful.*

The two phenomena which are suggested as focuses for future research are:

1) teachers who learn, develop, change to or maintain effective practices, and;
2) intervention processes (e.g. teacher education) designed to develop teachers' skills, knowledge, attitudes or behaviors.

Research on the teacher, particularly as an adult learner, must be concerned with all forces influencing teachers' learning and development, including such naturally occurring factors as the culture of the teaching profession, school organizational and institutional features, community attitudes and individual characteristics in addition to others mentioned in this paper. Such research describes and begins to explain the teaching/learning processes of teachers; identifies those teacher changes which appear amenable to interventions, context changes or selection processes; and defines the content of teacher education programs, as well as staff development programs for other educational personnel.

Research focussed on the processes of intervention is concerned with actions and/or programs designed to affect teachers' behaviors, skills,

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*This writer and the NIE would be most appreciative of comments, suggestions and questions that might aid us in strengthening and guiding our positions on the research necessary to fill the aforementioned knowledge and conceptual gaps. At present this framework is based on the Teaching and Instruction Program's best interpretation of the state-of-the-art as that interpretation has been developed in collaborative planning with researchers, practitioners and policy-makers.

attitudes and knowledge with the goal of improving instruction. This research describes and begins to explain these actions/programs, their relationships to their contexts and their effects. In addition, by identifying and investigating what are considered to be criteria of effectiveness for teacher education/staff development and attempting to operationalize them, research can contribute to the development of more appropriate interventions based upon realistic expectations.

More specifically related to the topic of this paper, investigation of the influence of context fits into this framework in the following manner. First, as alluded to earlier, I would advocate that we need to conceptualize ways in which we can investigate the relationship of context to the teacher and how this relationship affects that teacher's ability to function in a fashion consistent with what is known about effective teaching behavior. Second, we need to begin to conceptualize ways in which we can investigate the relationships between context and the intervention of teacher education. Since teacher education's goal is assumed to be to assist the teacher in developing or maintaining effective teaching practices and, ultimately, to help the teacher produce increased student learning, teacher education is a means to an end. We need to know much more about how context influences that means before we begin to even consider prescribing ways in which to accomplish the ends.

This overview needs to include two definitions which I am utilizing and which I realize are not universally accepted. They should, rather, alert the reader to the frame of reference I am using and are also intended to stimulate the reader to think about his/her own definitions of the same terms and the appropriateness of both my and the reader's

definitions. As mentioned earlier my idea of teacher education is an entire continuum of preservice, induction (the early years of full-responsibility teaching) and inservice (post-early years until retirement) activities intended for the professional and personal growth of the teacher and, ultimately, for the maximization of student learning. Finally, and perhaps more importantly, context is seen, admittedly broadly, as the interaction of the knowledge, skills, attitudes and behaviors of educational personnel, students and others with factors and conditions such as preparation, setting, roles, socialization processes and stages of adult development. Context is not seen simply, for example, as structural or organizational conditions although these certainly are viewed as one part of context. My preference for this conceptualization of context as being a larger realm than perhaps many in the past have defined it as being is based in my cumulative assessment of the literature and is related to my earlier-stated view that context is a set of interactive conditions (although separate context conditions may be active or static) and not a set of static conditions. The balance of the paper will be directed toward convincing the reader this conceptualization of context is not only acceptable but essential in accurately assessing its influence on the teacher and on teacher education.

Existing Investigations Relevant to Context

The conceptual and empirical work upon which the above-described suggestions for examining the interaction of context, teaching (particularly teachers) and teacher education is not overwhelming in quantity but has

been increasing steadily in recent years. A quick look at the AERA program for this year reveals a significant increase in the number of studies which are investigating elements of teaching and teacher education which begin to extend beyond much of the scope of previous efforts. Although there is not an avalanche of conclusive findings, there is a beginning that evidences both perceptual and methodological promise. The work has already begun to yield valuable insights regarding the basic issues to be studied and has produced elements of useful research strategies for addressing these issues.

My earlier comments regarding the limited nature of "teacher effects" or "instructional process" research as a basis for getting a clear understanding of teaching and teacher education was not intended as a condemnation of the relevance of that work in offering guideposts for new work. In addition to the individual researchers in that field who have built upon their earlier work to perceive additional necessary tasks, there is also utility in some of the methodological tools that have been employed in classroom research. For instance, many of the ethnographic approaches utilized provide means by which to get a more complete picture of the classroom and, with adaptations, can be extremely useful in looking more carefully at other pieces of the teacher's and teacher educator's world. Case studies also hold much potential for more in-depth analysis of many of the elements of context. Although it may be premature to attempt to employ many of the specific complex data analyses techniques that have been used in teacher effects research, given the lack of thorough understanding of the basic phenomena which we presently need to examine, the principles developed resulted from recognizing that instruction is a complex

process and cannot be reduced to simplistic and unidimensional data collection, analyses and interpretation processes. There is every reason to believe that that principle will hold, if not be even more important, in investigating the relationship among context, teaching and teacher education.

The emerging work in this area of context includes, in different studies, efforts that are both conceptual and empirical in nature and also includes both qualitative and quantitative emphases. The blend of conceptual/empirical and qualitative/quantitative appears desirable due to the embryonic state-of-the-art of research in this area and the resultant need for diversified approaches of a complementary nature in seeking a more complete mapping of the terrain. This approach also gives us the opportunity to simultaneously examine the relationship of theory to practice and vice versa in order that one might inform the other. Kurt Lewin and others have pointed out the interrelatedness of theory and practice and the artificiality and inappropriateness of trying to separate them or present them as simply linear or sequential in nature. Koehler (1979) has presented a potentially extremely useful delineation of two types of research that were originally referred to by Gage (1966) and which she now further explicates and proposes serve as complementary research techniques in the study of teaching and teacher education. Briefly, she explains the basic difference as being that <u>improvement</u> research is designed to directly contribute to the improvement of practice while <u>descriptive</u> research is intended to "understand or produce knowledge about a phenomenon...with an aim of theory development to be used in understanding what is happening, and/or how or why things happen the way they do."

Although studies may employ elements of both of these approaches, I have taken the liberty of categorizing several of these examples of work with implications for understanding the relationship of context, teaching and teacher education. I have done so with no intent to "pigeon-hole" the work but in order to see how important aspects of these efforts might be thought of in terms of their potential contributions to addressing the issues. With advance apologies to those who would argue that they have been inaccurately interpreted or misplaced, I shall proceed. Again, only examples have been chosen--no attempt is claimed or has been made to look at all of the efforts underway.

Improvement Research

This would appear to have the most immediate appeal to practitioners and policy-makers because it works more directly toward bringing about better practice. It is also the type of research, one could argue appropriately so, which has been much less in evidence in regard to context, teaching and teacher education because it requires some criteria of effectiveness and judgements about more and less effective processes. Since we know little about the processes of context and its interaction with other elements, it is very difficult to design valid studies of this nature at this time. Nevertheless, there are improvement studies which focus primarily on one element (e.g. teacher education) and which shed much needed light on the implications for context.

One set of examples would be attempts to derive teacher education treatments from teacher effectiveness results and to test the effectiveness of those treatments in helping teachers to exhibit those behaviors desirable for increased student learning.

One experimental study in this category (Stallings, et al, 1978), conducted at the secondary level, has several implications for the reality of the differential influences of context on the impact of teacher education treatments. Building upon teacher effects results, a series of workshops were held where, following substantial classroom observation, teachers were provided feedback on the nature of the instructional processes in their classrooms. The teachers worked with the researchers to explore ways in which the teachers might try to increase or develop behaviors believed to be correlated with effective instruction and subsequent workshops continued to aid teachers in putting those behaviors into practice within the specific context of their classrooms. A quasi-clinical study during the second year of the effort (with half the teachers having received training and half not having received it) revealed that trained teachers did tend to go up in or maintain their level of effective behaviors but that there was considerable variation in the extent to which this was the case. The investigators' analyses of the information available on context seems to indicate the possibility that these conditions serve an important mediating factor in determining how treatments do or do not convert to implementation of changed behaviors. Such school policies as teachers rotating from classroom to classroom, variable grading systems, etc. were viewed as having impact. Within-school variations were as prevalent as between-school variations. All of which points to the crucial nature of various types of context on implementation.

Other experimental studies investigating the impact of various teacher education treatments on teacher behavior and student outcomes include the following. Gage and Crawford (1978) utilized path analysis techniques to attempt to determine causal relationships among teacher education treatments,

classroom behaviors and, student outcomes in third-grade classrooms. They assessed entering pupil abilities and teacher characteristics (e.g. verbal ability, self-report of structuredness of teaching style) and then instituted a limited (materials only) and full (materials and workshops) treatment and a control group over a November to January time span. The treatments were successful in producing implementation of the desired behaviors on the part of the experimental teachers and in producing high student time on task (you'll recall this as a central element of the direct instructional construct). In addition, when parents assisted in working with the students, results were even more positive in terms of student achievement. Although this study represents another very early step and does have some methodological and conceptual areas that are ripe for discussion and debate, it does comprise one of the initial efforts to show the potential for changing teacher behaviors and increasing those behaviors which correlate strongly with increased achievement. Anderson, Evertson and Brophy (1979) showed similar results in a study of first grade classrooms utilizing extensive direct observation of classrooms and teacher/student interaction just as had been the case in the other studies. Good and Grouws (1978) again found that relatively simple treatments, this time with fourth-grade mathematics teachers, can lead to significant changes in teacher behavior and student achievement. Better understanding of these relationships is essential before we can profess legitimate understanding of and justification for drawing relationships between teacher education treatments and the ultimate dependent variable, at least in many people's minds, of student outcomes. There is a weak knowledge link between treatment and changed behavior and we have limited information on which to base decisions about how to increase congruence between treatments and the

reality of the context. There are problems in attempting to conduct this type of research and they range from sampling and the unit of analysis issues to the appropriate ways to utilize combinations of both quantitative and qualitative information (Koehler, 1979; Schalock, 1979).

Descriptive Research

Recalling that the aim here is better understanding of phenomena and theory development and that there is no concern for a criterion of effectiveness, the range of relevant activities herein is much broader than has been the case in improvement research. There simply does not appear to be a sufficient knowledge base or conceptual clarity about the effects of context and so more of this type of work has been in evidence.

Empirical and conceptual emphases are more difficult to distinguish in two major efforts that have been 1) examining the nature, in a non-experimental fashion, of occurrences when one tries to use research as a basis for bringing about teacher improvement through collaborative research/implementation and, 2) investigating the impact of the change process, particularly on the teacher, when an innovation (e.g. teacher education activities) is being introduced. In fact, a major strength of these studies may well lie in the fact that they have incorporated both empirical and conceptual work in their efforts.

The first study, utilizing an approach called Interactive Research and Development on Teaching, employs many of the underlying principles which in earlier years were known by various titles such as "action research" and "cooperative studies." The design "places teachers, researchers and trainer/developers together to inquire as a team, beginning with the initiation of the R & D process, into the questions, problems and concerns of classroom

teachers. The team is charged with conducting research and concurrently developing training based on both their research findings and the research methods and procedures employed in their study. Decisions are made collaboratively...each member of the team has parity and shares equal responsibility for the team's decisions and actions." (Ward & Tikunoff, 1979). The outcomes of this process, as documented by multiple means and large amounts of descriptive data collected on site, have yielded detailed information on the nature of the context in which the research and development were planned and carried out and the impact of that context on implementation. The high degree of active involvement, sense of "ownership" and "efficacy," concern for relevance of procedures used to situation-specific applications and the perceived value of the overall process all tell us that, at the very least, this type of process, as evidenced in this project, has viability and credibility with those facing the day-to-day realities of the context. The IR & DT project is not the only attempt to utilize descriptive research methodologies to gain insights into the context for teaching and teacher education (e.g. Bussis, Chittenden and Amarel, 1977) and the need for continuation of these to increase our knowledge base is critical.

The second study is the work initially espoused by Fuller, conceptualized and developed by Hall and being carried out through an effort known as the Procedures for Adopting Educational Innovations project (Hall, 1978). That work provides means by which the individual concerns of innovation users (e.g. teachers) can be assessed along with the degree to which and reasons why these users are or are not implementing the innovation. The implications of that work are considerable in terms of the assistance that it could

provide in making the introduction of an innovation such as teacher education activities more compatible with and palatable to the users and the specific context in which the innovation will be implemented.

Furthermore, the project is now beginning to conceptualize the alternative interventions that might be appropriate in increasing the successful adoption or adaptation of innovations and this will involve in-depth consideration of how the context will interact with these interventions and the innovation.

Much of this research has pointed up the need for and/or begun to provide more information and understanding about at least three factors: 1) the dimensions of the workplace and the nature of the interactions of these dimensions, 2) the nature and perspectives of the individual teacher that is functioning in that workplace and 3) the nature and effect of interventions which are designed to serve certain purposes and the extent to which those purposes are congruent and compatible with both 1) and 2).

Another example is the work of Doyle (1979) in conducting a three-year study of secondary teachers beginning with student teaching and trying to build a "descriptive theory of classrooms" along with more information of what he refers to as the "trajectory of induction" or general pattern of events that teachers follow in learning to become teachers and/or adjust to teaching and the workplace. Although this work would be classified as research on teaching and instruction processes, Doyle has really taken it a step further because he has taken the developed grounded theory of classroom environments and spoken to its implications for various phases of teacher education. For example, one aspect of the work describes classrooms

as having functions of multidimensionality, simultaneity, immediacy, unpredictability and history, all of which are realities to be faced by the teacher as he/she strives toward the basic goal of "securing the cooperation of students in classroom activities." The basic problem of teaching and teacher education, then, as seen by Doyle, is the need to find ways to translate the knowledge ("schema") that a teacher possesses into activities techniques ("scripts") that are compatible with the complexity of the classroom. He proposes the need for both additional research on classroom knowledge (e.g. naturalistic studies of teacher planning and how effective "scripts" are selected) and on teaching classroom understandings (e.g. visual displays of "scripts" to accompany verbal descriptions and conceptual frameworks presently comprising teacher education). His basic point seems to be the encouragement of research on the complex processes of learning to be a teacher in the classroom.

Fenstermacher (1979) takes what I view to be a complementary but even more basic and philosophical view of how we need to examine the influence of context on teaching and teacher education. Fenstermacher is also concerned with the nature and the influence of the workplace and with induction, which he feels to be the most formative stage whereby these influences are brought to bear. He discusses specific examples of what he calls "institutional characteristics of schooling" which appear worthy of investigation as powerful influences (e.g. power and authority patterns, reward structures, technical language systems and symbols, organizational structures and relationships). As a point of differentiation, however, Fenstermacher is interested in how these contextual factors influence "intentions" of teachers and how teacher education does or does not influence these intentions

in comparison with the context itself. He hypothesizes that teachers have "intentions in storage" (formulated elsewhere but found unusuable in practice) and "intentions in use" (what the teacher has to do as a result of the realities of induction). He also addresses what I believe to be an important prior question of "Should a preservice teacher education program prepare prospective teachers for a troublefree induction into schooling?" and suggests that that is a normative question rather than an empirical one and that it requires moral inquiry. In conclusion, he claims that "teacher education shares responsibility for understanding how institutional features may (or may not, I would add) be altered to facilitate the conversion of a teacher's new knowledge or skill to intentions in use." In another paper, and in a complementary nature, (Fenstermacher, in press in 1979) he argues vehemently and articulately that teacher education should explore the extent to which it encourages "rule conversion" (direct translation of research results into practice) at the expense of "transformation" (where evidence is presented and the teacher is assisted in learning how to adapt or adopt the evidence in view of the context). The Interactive Research and Development on Teaching project concluded that something very similar to the implementation of "transformation" strategies was the best way to help teachers utilize research results and, to a much greater extent, the processes of research. The mutual call is for investigating the possibility for teacher education providing the tools for such "transformation" strategies to prospective and present teachers.

This relates in many ways to what Elliott (1976-77) referred to as the "self monitoring" teacher and Feiman's (1979) suggestion that we need to locate and study environments deliberately designed to foster these

strategies. Fox's (1977) work in looking at Teacher Corps interns and their induction into the classroom reinforces the point that "rule conversion" modes based on developing rigid expectations in preservice teachers, no matter how well based in research evidence, tend to result in Fenstermacher's "intentions in storage" because the nature of induction into the classroom is so traumatic and unexpected that very different "intentions in use" overwhelm the prior learning. In Fox's study, some of the many reasons for this were that interns were not given full responsibility for anything "significant" in their classrooms, they were not provided with sufficient direction from experienced colleagues and had difficulty developing relationships with other teachers who saw them more as trainees than colleagues.

These latter points also bring one to another aspect of context that has been discussed generally in many ways by many people but about which we still know very little. That is, the socialization processes encountered by teachers. Again, the trauma of this has been emphasized (e.g. Lortie, 1975) but we still have an abundance of untested hypotheses in teacher education, derived from other disciplines, about how and when various stages of socialization take place and what, if anything, teacher education could do to ameliorate the trauma that appears so evident, particularly for new teachers be they just out of college or newly assigned to a different school or district. Fyfield, Taylor and Tisher (1978) do a good job of summarizing the range of hypotheses from considering early experiences with teacher's own previous teachers as role models, particularly for beginning teachers (Lortie, 1966) to the dominant socialization roles of peers and persons in authority (Edgar and Warren, 1969), to the impact of pupils (Haller, 1967; Halley, 1969). Perhaps, suggests Lacey (1977), socialization is much more of an interactive

process with these and other types of factors combining with individual characteristics of the teacher to determine the rate and nature of socialization.

A final area that appears very worthy of conceptual work and hypothesis development is the potential application of knowledge of adult developmental stages to the education of teachers. Although most work on human development has been done with children, adolescents and abnormal adults, there is an emerging theory of adult development which is attempting to validate predictors of adult "success" in various professions and life functions. Sprinthall (1979) informs us of the work which has shown the failure of academic achievement and scholastic aptitude to predict adult success (Nicholson, 1970; Kohlberg and Mayer, 1972; McClelland, 1973). The factors that do evolve as predictors of success are developmental concepts such as Heath's (1977) "psychological maturity" and Hunt and Sullivan's (1974) "levels of conceptual maturity." Both of these concepts are tied to measurable behaviors which are characteristic of persons at various stages or levels of these concepts. At higher levels, "success" as adults appears to be more prevalent and, in the case of the Hunt and Sullivan work, teachers and counselors were the subjects of study. Although one may choose to argue that the characteristics indicative of persons at Hunt and Sullivan's higher conceptual levels do not necessarily coincide with effective teaching behaviors in certain situation-specific cases, the fact is that we do have measures of another type of development (psychological) to consider along with measures of skill, knowledge, etc. It holds promise for providing a much more complete picture of the nature of the individual with whom teacher educators will try to work. Of course, it would also be useful in telling us more about teacher educators themselves.

Some work has been done in attempting to develop higher conceptual levels with preservice and inservice teachers (Hurt and N. Sprinthall, 1976; N. Sprinthall and Bernier, 1978) and mixed results have been evidenced. These are only starting points, however, and there is much more that needs to be examined in terms of how these stages relate to various contexts and whether or not various alternative approaches can be effectively utilized to bring about desired levels for these situations. It is much too early to call for drastic changes in teacher education on the basis of new-found and insufficiently examined information about stages of adult development but it is one more factor that should be considered with regard to being an independent contextual variable and a variable perhaps dependent on context.

Implications

One can get very frustrated when looking at just the range of information necessary and the problems of acquiring, analyzing, interpreting and utilizing it. In addition, the topics touched upon here are only part of the areas of interest. The criterion question for effective teacher education, which Bob Floden addressed in another paper in this session, must provide an undergirding and direction for how many of the other areas are to be addressed. The difficulties of collaboration, as well as the joys, will be experienced in the definition of research on teaching and on teacher education. We do have practical alternatives in terms of the actual conduct of the research but it is in the area of decisions on what and when to research, and at what cost, that decision-makers will have to bite the bullet. As Gene Hall has described in another part of this session, that process is both complex and time-consuming.

Schalock (1979) has spoken with considerable perceptiveness about the need for this type of research to address such crucial teacher educator concerns as necessary bases for selection of candidates and for certification standards. He speaks to the importance of these issues not only to teacher educators but as matters of "public trust," since it is these areas which are perceived by the public as being the most obvious control points for quality education of our children. It cannot be only academic concerns with which research on teaching and teacher education concerns itself. Accountability and the pressures of stagnant or reduced resources are going to force us to make better use of what we have. Many potentially researchable issues that have had limited visibility and priority in the past will now be prime subjects for investigation simply because they are now being questioned. If they are to be maintained or given higher priority, then research must help provide the justification for such actions just as it must help provide the justification for termination or revision of inappropriate or ineffective practices. Unfortunately or fortunately, depending on your perspective, both teaching and teacher education fall within those areas in need of clarification and explanation.

But we should be challenged, not disheartened, by this state. The beginnings that have been mentioned here should give us some degree of confidence that we at least have recognized some of the problems and that is always a necessary first step. There are alternative parts of frameworks that do exist on many of the context issues that have been discussed and our task appears to be to first bring together and understand what we have and to identify the knowledge and conceptual gaps that exist. Central to these processes will be institutions like the Institute for Research on

Teaching and the Research and Development Center for Teacher Education which have explored and will continue to explore creative new approaches to addressing the issues and will also contribute by attempting to synthesize and build upon the existing knowledge bases. Collaborative research efforts involving teachers, teacher educators, researchers and other relevant personnel have shown that that approach has considerable promise. Several individuals cited in this paper and many of their colleagues who have not been mentioned because of space limitations can be expected to add even more insights to the process of deciding upon appropriate purposes, goals, procedures and uses for research on teaching and teacher education. Descriptive and improvement research both appear necessary and are not isolated from one another, as evidenced by the fact that descriptive research can inform improvement research as well as provide understanding of a phenomenon.

In any case, we need to examine these hypotheses much more closely if we are ever to hope to break out of the unfortunate state of viewing the various stages of teaching and teacher education as anything other than "black boxes" (Ryan, 1979). The needs are evident and are being defined in a more clear manner. Conceptual and empirical work is beginning to provide directions. We need to get on with the work of building upon that foundation to develop the necessary understanding of the interactive nature of context, teaching and teacher education and then to use that knowledge for the betterment of practice.

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